FIG. 1

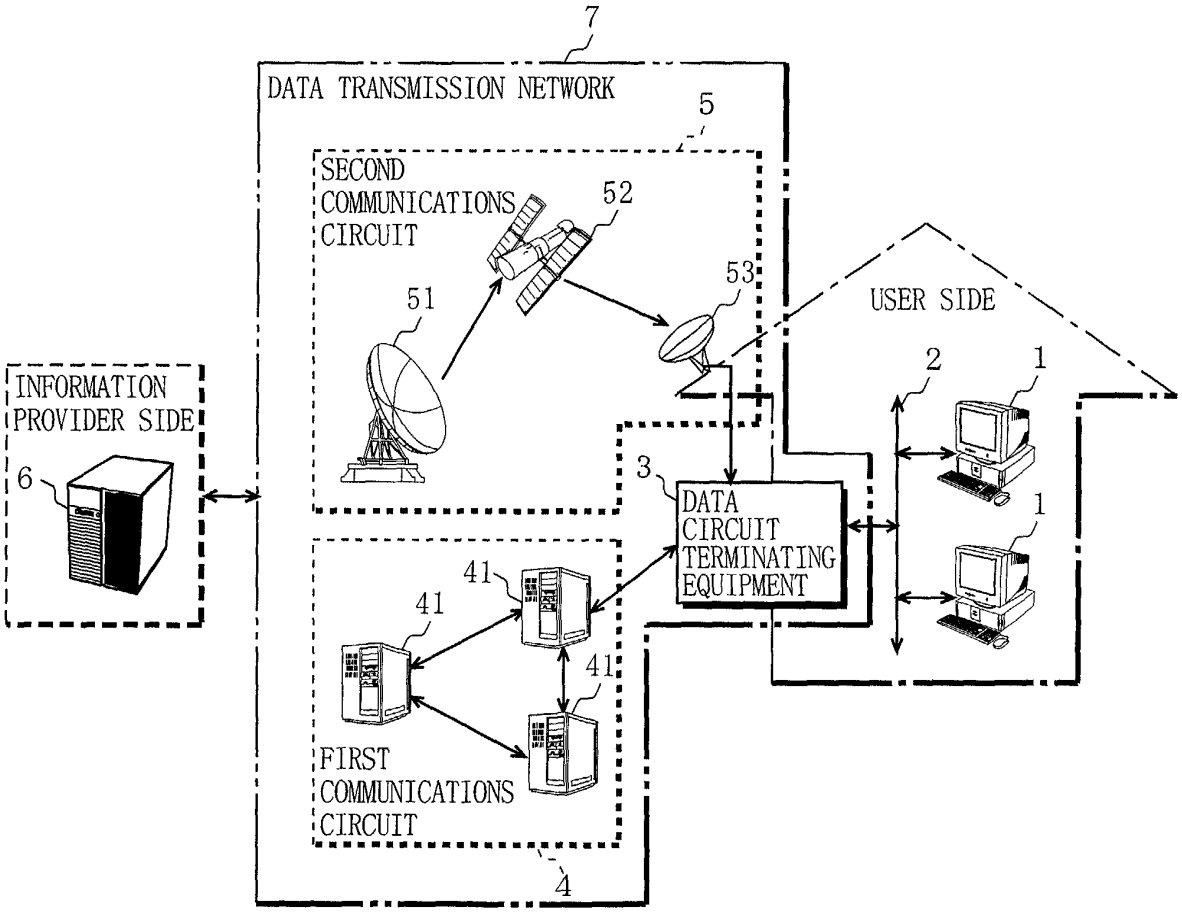

7
DATA TRANSMISSION NETWORK
5
SECOND COMMUNICATIONS CIRCUIT
52
53
51
USER SIDE
INFORMATION PROVIDER SIDE
6
2
1
3
DATA CIRCUIT TERMINATING EQUIPMENT
1
41
41
41
FIRST COMMUNICATIONS CIRCUIT
4

FIG. 2

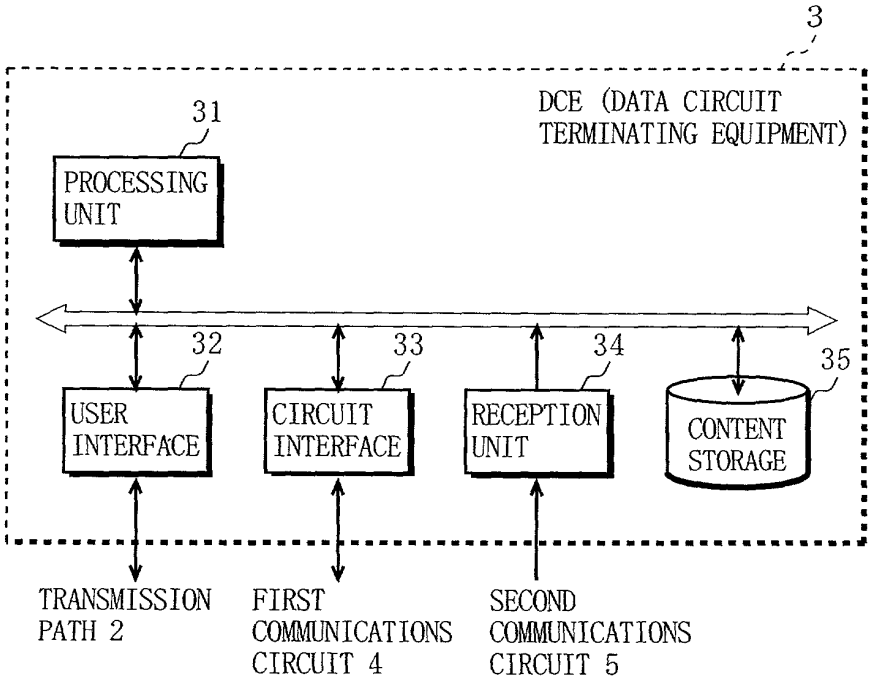

3
DCE (DATA CIRCUIT TERMINATING EQUIPMENT)
31
PROCESSING UNIT
32
33
34
35
USER INTERFACE
CIRCUIT INTERFACE
RECEPTION UNIT
CONTENT STORAGE
TRANSMISSION PATH 2
FIRST COMMUNICATIONS CIRCUIT 4
SECOND COMMUNICATIONS CIRCUIT 5

FIG. 3

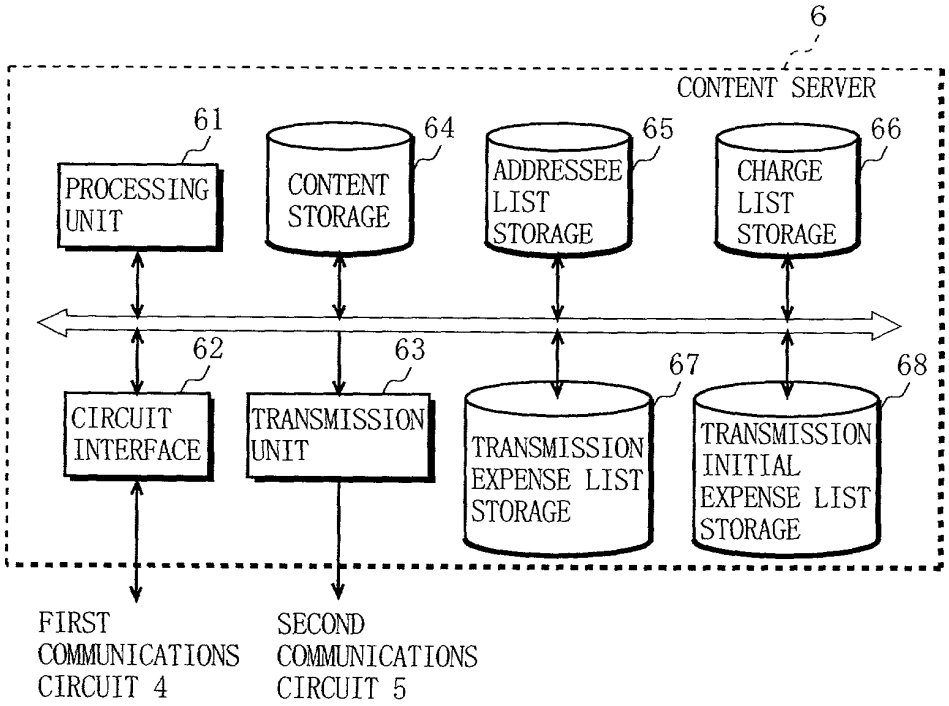

6
CONTENT SERVER
61
64
65
66
PROCESSING UNIT
CONTENT STORAGE
ADDRESSEE LIST STORAGE
CHARGE LIST STORAGE
62
63
67
68
CIRCUIT INTERFACE
TRANSMISSION UNIT
TRANSMISSION EXPENSE LIST STORAGE
TRANSMISSION INITIAL EXPENSE LIST STORAGE
FIRST COMMUNICATIONS CIRCUIT 4
SECOND COMMUNICATIONS CIRCUIT 5

FIG. 4

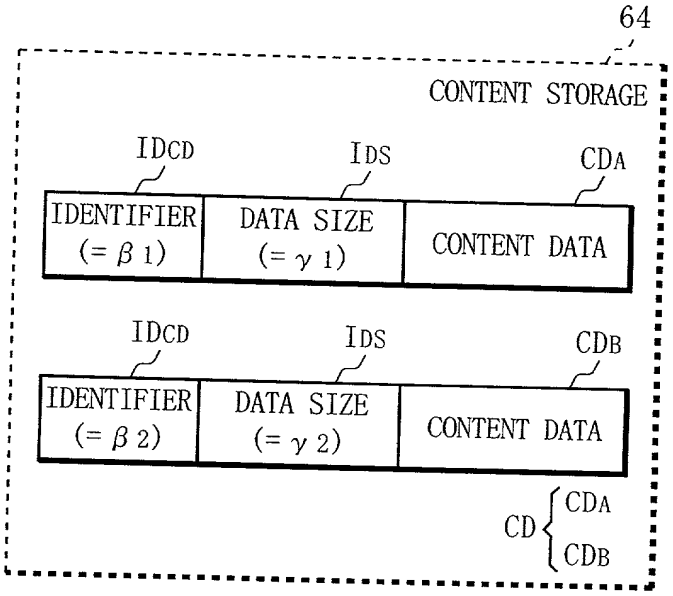

64
CONTENT STORAGE
IDCD
IDS
CDA
IDENTIFIER (= β 1)
DATA SIZE (= γ 1)
CONTENT DATA
IDCD
IDS
CDB
IDENTIFIER (= β 2)
DATA SIZE (= γ 2)
CONTENT DATA
CD
CDA
CDB

FIG. 5

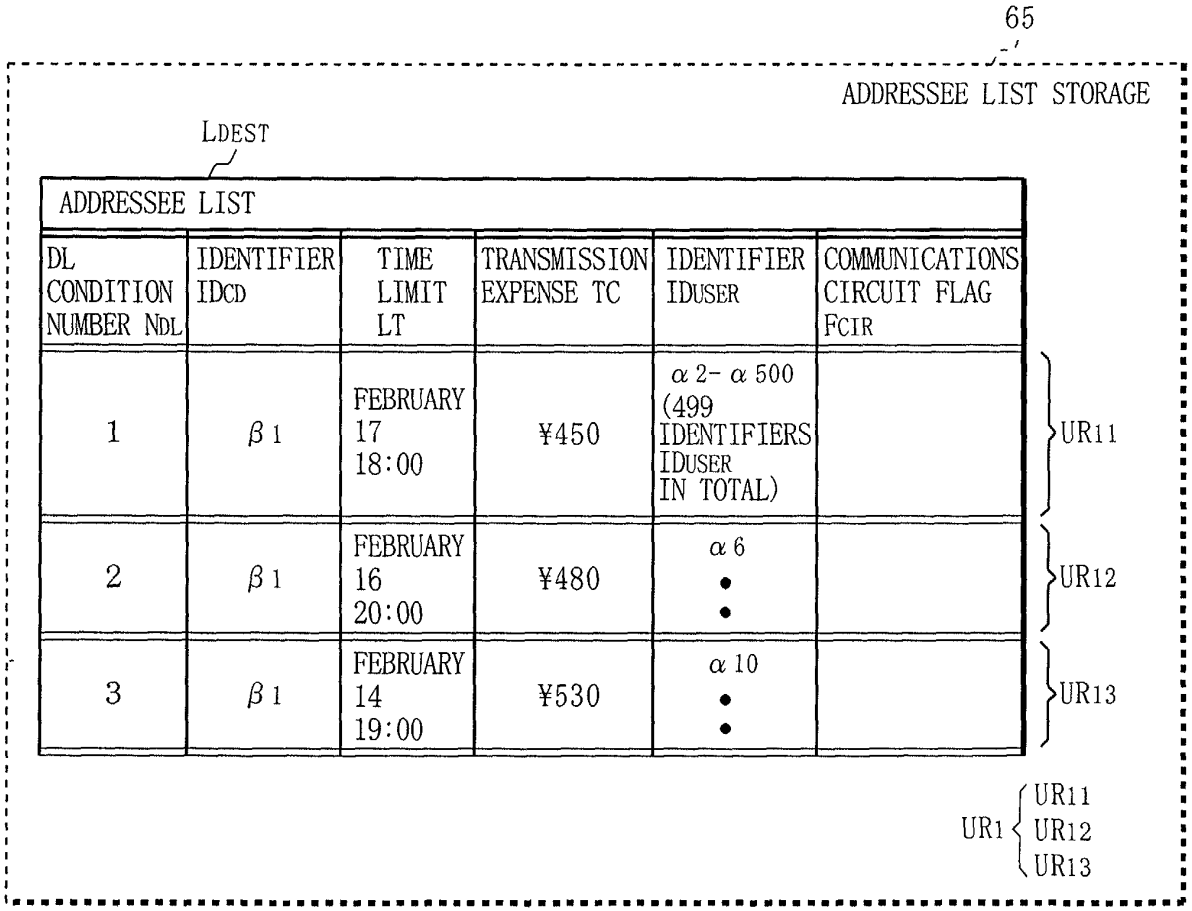

65
ADDRESSEE LIST STORAGE
LDEST
ADDRESSEE LIST
DL CONDITION NUMBER NDL
IDENTIFIER IDCD
TIME LIMIT LT
TRANSMISSION EXPENSE TC
IDENTIFIER IDUSER
COMMUNICATIONS CIRCUIT FLAG FCIR
1
β1
FEBRUARY 17 18:00
¥450
α2- α500 (499 IDENTIFIERS IDUSER IN TOTAL)
UR11
2
β1
FEBRUARY 16 20:00
¥480
α6
UR12
3
β1
FEBRUARY 14 19:00
¥530
α10
UR13
UR1
UR11
UR12
UR13

FIG. 6

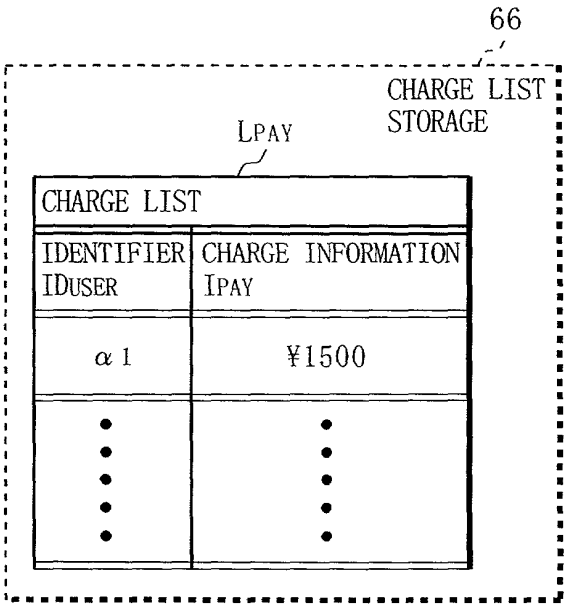
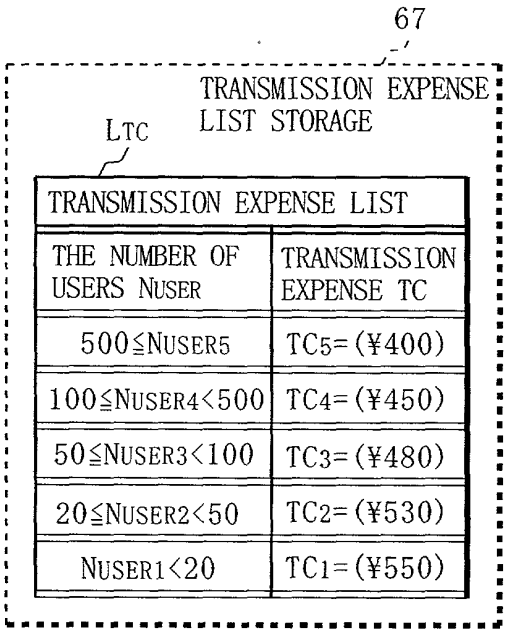
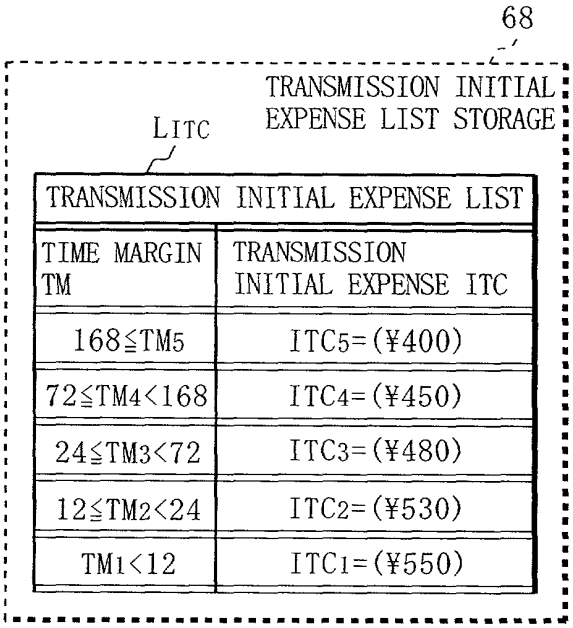

66
CHARGE LIST STORAGE
LPAY
CHARGE LIST
IDENTIFIER IDUSER
CHARGE INFORMATION IPAY
α1
¥1500

FIG. 7



TRANSMISSION EXPENSE LIST	
THE NUMBER OF USERS NUSER	TRANSMISSION EXPENSE TC
500≦NUSER5	TC5=(¥400)
100≦NUSER4<500	TC4=(¥450)
50≦NUSER3<100	TC3=(¥480)
20≦NUSER2<50	TC2=(¥530)
NUSER1<20	TC1=(¥550)

FIG. 8



TRANSMISSION INITIAL EXPENSE LIST	
TIME MARGIN TM	TRANSMISSION INITIAL EXPENSE ITC
168≦TM5	ITC5=(¥400)
72≦TM4<168	ITC4=(¥450)
24≦TM3<72	ITC3=(¥480)
12≦TM2<24	ITC2=(¥530)
TM1<12	ITC1=(¥550)

FIG. 9

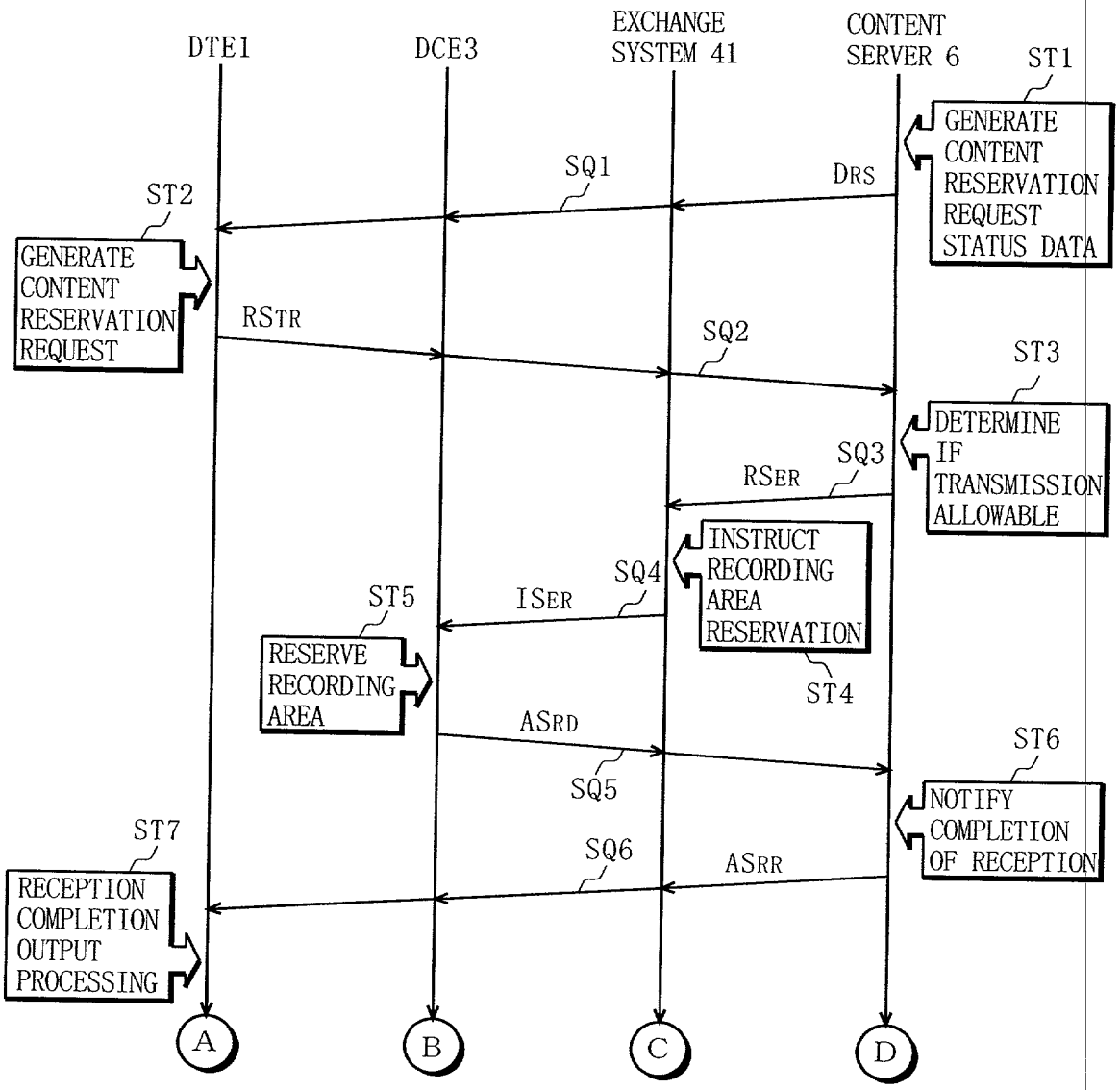

DTE1
DCE3
EXCHANGE SYSTEM 41
CONTENT SERVER 6
ST1
GENERATE CONTENT RESERVATION REQUEST STATUS DATA
SQ1
DRS
ST2
GENERATE CONTENT RESERVATION REQUEST
RSTR
SQ2
ST3
DETERMINE IF TRANSMISSION ALLOWABLE
SQ3
RSER
INSTRUCT RECORDING AREA RESERVATION
ST4
SQ4
ISER
ST5
RESERVE RECORDING AREA
ASRD
SQ5
ST6
NOTIFY COMPLETION OF RECEPTION
ST7
SQ6
ASRR
RECEPTION COMPLETION OUTPUT PROCESSING
A
B
C
D

FIG. 10

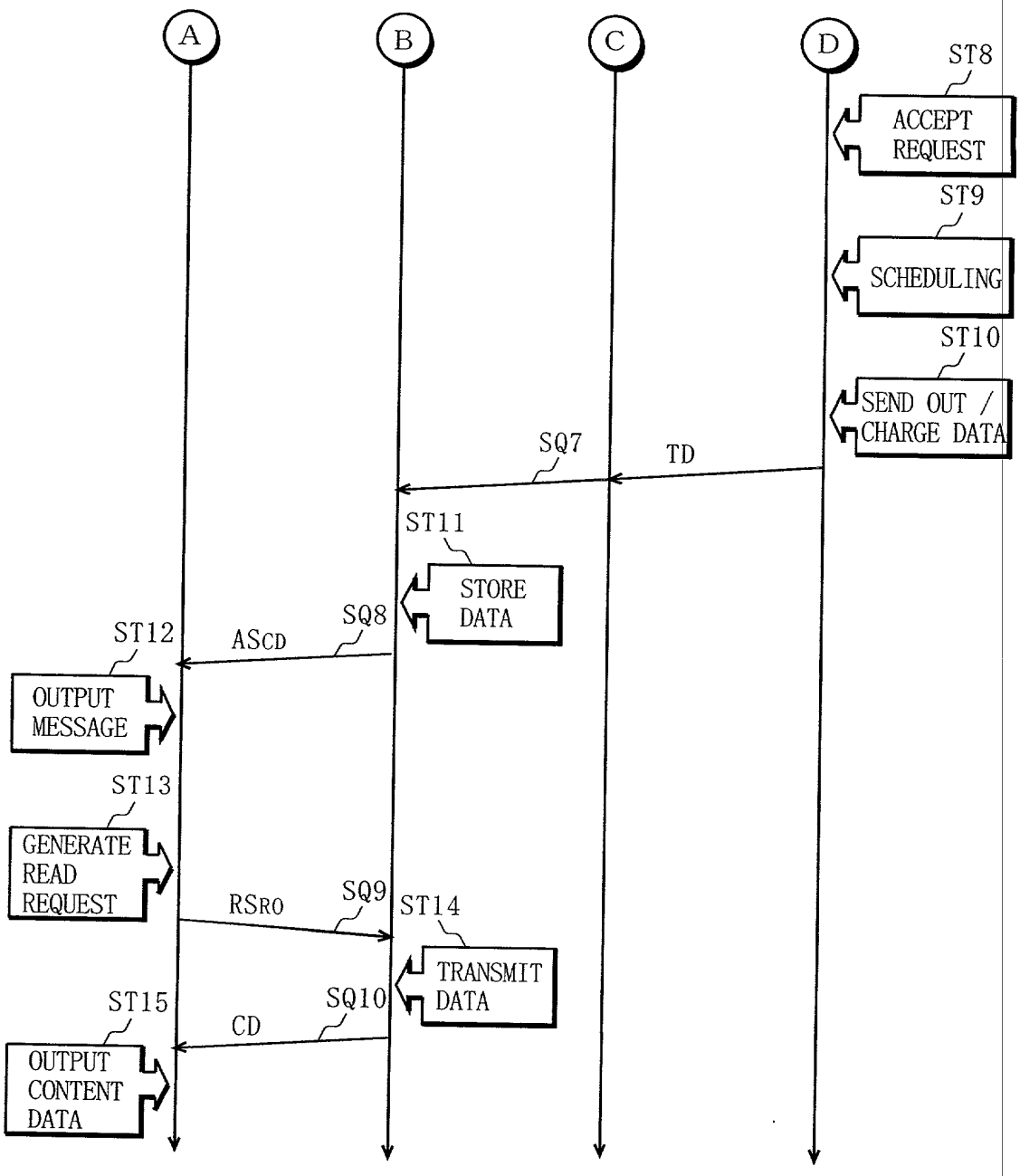

A
B
C
D
ST8
ACCEPT REQUEST
ST9
SCHEDULING
ST10
SEND OUT / CHARGE DATA
SQ7
TD
ST11
STORE DATA
SQ8
ASCD
ST12
OUTPUT MESSAGE
ST13
GENERATE READ REQUEST
RSRO
SQ9
ST14
TRANSMIT DATA
SQ10
CD
ST15
OUTPUT CONTENT DATA

FIG. 11

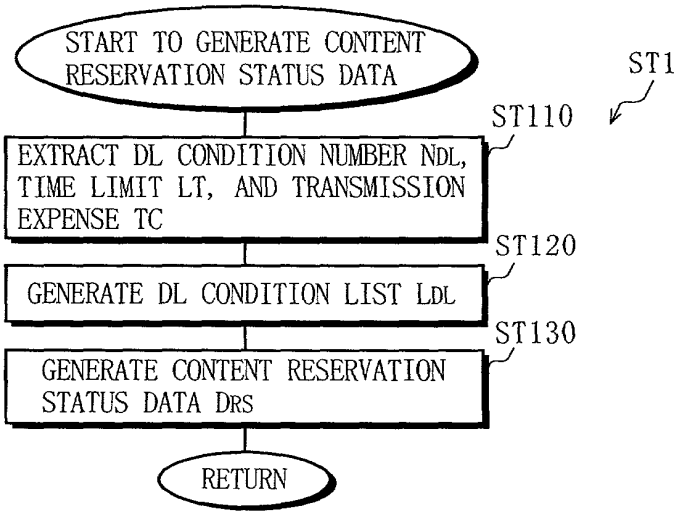


FIG. 12

DL CONDITION NUMBER NDL	TIME LIMIT LT	TRANSMISSION EXPENCE TC	
1	FEBRUARY 17 18:00	¥450	LDL1
2	FEBRUARY 16 20:00	¥480	LDL2
3	FEBRUARY 14 19:00	¥530	LDL3

CONTENT DATA CDA
CONTENT DATA CDB
TIME LIMIT LT

LDL { LDL1, LDL2, LDL3

FIG. 13a

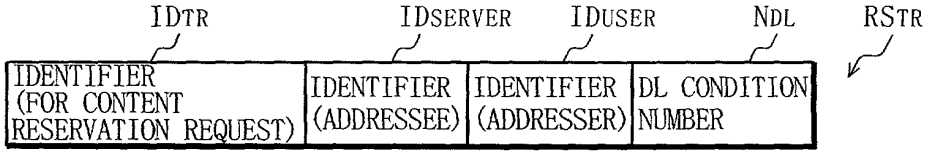


FIG. 13b

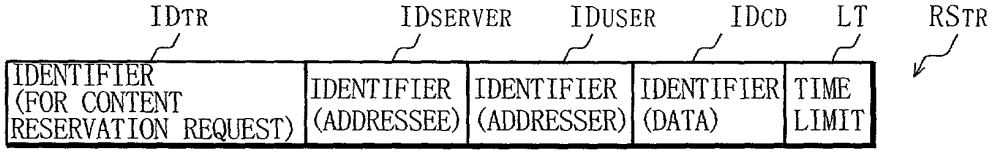


FIG. 13c

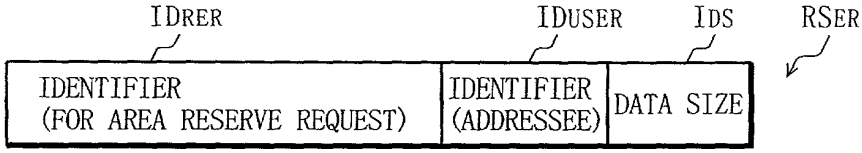


FIG. 13d

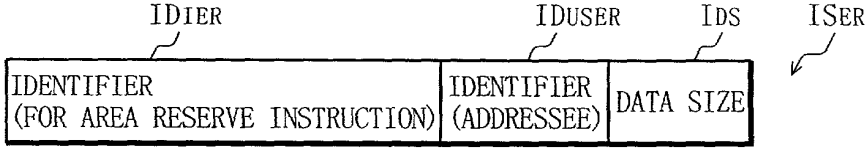


FIG. 13e

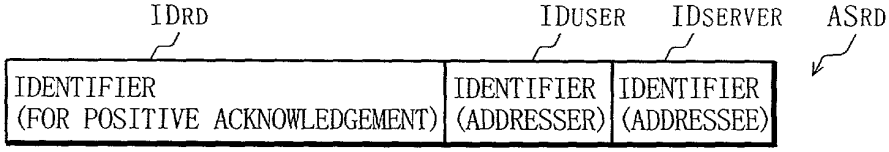


FIG. 13f

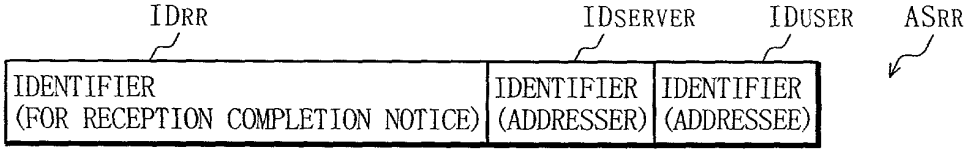


FIG. 13g

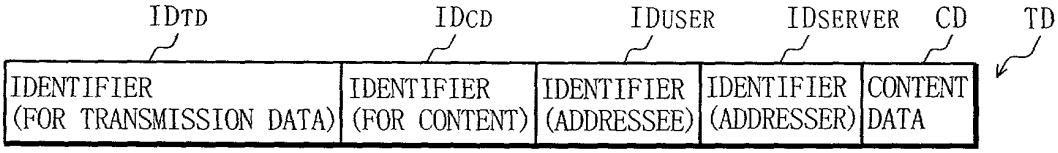


FIG. 14

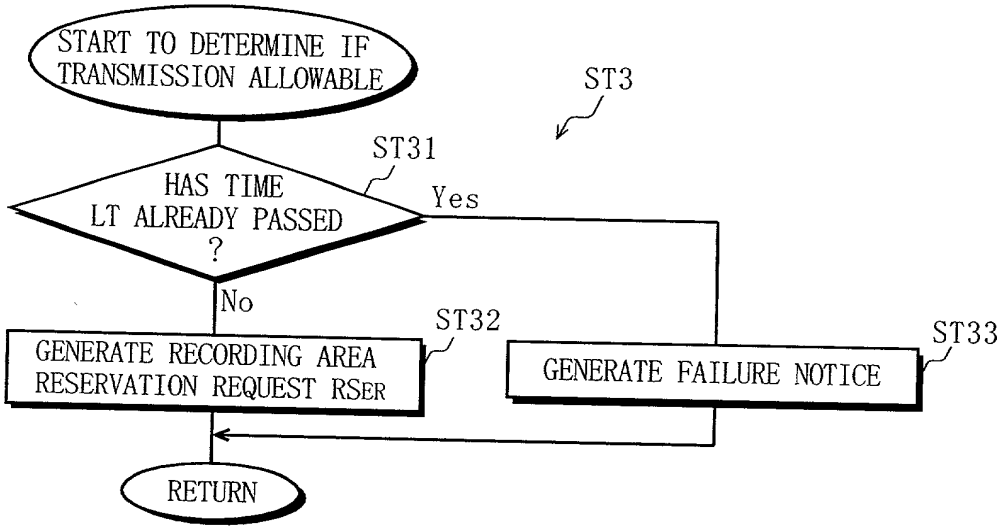

START TO DETERMINE IF TRANSMISSION ALLOWABLE
ST3
ST31
HAS TIME LT ALREADY PASSED ?
Yes
No
ST32
GENERATE RECORDING AREA RESERVATION REQUEST RSER
ST33
GENERATE FAILURE NOTICE
RETURN

FIG. 15

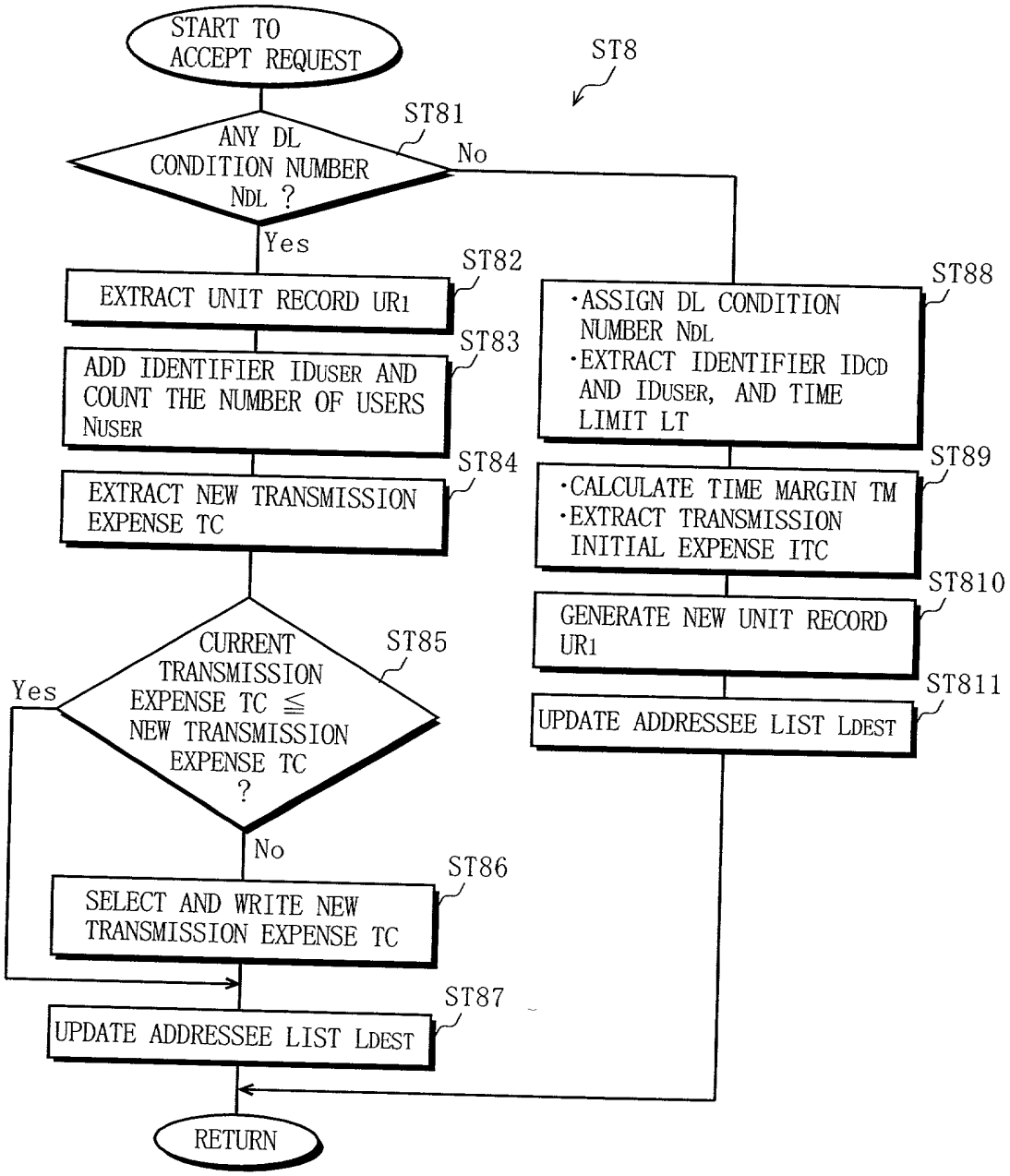

START TO ACCEPT REQUEST
ST8
ST81
ANY DL CONDITION NUMBER NDL ?
No
Yes
ST82
EXTRACT UNIT RECORD UR1
ST83
ADD IDENTIFIER IDUSER AND COUNT THE NUMBER OF USERS NUSER
ST84
EXTRACT NEW TRANSMISSION EXPENSE TC
ST85
CURRENT TRANSMISSION EXPENSE TC ≦ NEW TRANSMISSION EXPENSE TC ?
Yes
No
ST86
SELECT AND WRITE NEW TRANSMISSION EXPENSE TC
ST87
UPDATE ADDRESSEE LIST LDEST
RETURN
ST88
·ASSIGN DL CONDITION NUMBER NDL
·EXTRACT IDENTIFIER IDCD AND IDUSER, AND TIME LIMIT LT
ST89
·CALCULATE TIME MARGIN TM
·EXTRACT TRANSMISSION INITIAL EXPENSE ITC
ST810
GENERATE NEW UNIT RECORD UR1
ST811
UPDATE ADDRESSEE LIST LDEST

FIG. 16a

UR11

DL CONDITION NUMBER N_{DL}	IDENTIFIER ID_{CD}	TIME LIMIT LT	TRANSMISSION EXPENSE TC	IDENTIFIER ID_{USER}	COMMUNICATIONS CIRCUIT FLAG F_{CIR}
1	$\beta 1$	FEBRUARY 17 18:00	¥450	$\alpha 2$- $\alpha 500$ 499 IDENTIFIERS ID_{USER} IN TOTAL	

FIG. 16b

UR11

DL CONDITION NUMBER N_{DL}	IDENTIFIER ID_{CD}	TIME LIMIT LT	TRANSMISSION EXPENSE TC	IDENTIFIER ID_{USER}	COMMUNICATIONS CIRCUIT FLAG F_{CIR}
1	$\beta 1$	FEBRUARY 17 18:00	¥400	$\alpha 1$- $\alpha 500$ 500 IDENTIFIERS ID_{USER} IN TOTAL	

FIG. 16c

UR14

DL CONDITION NUMBER N_{DL}	IDENTIFIER ID_{CD}	TIME LIMIT LT	TRANSMISSION EXPENSE TC	IDENTIFIER ID_{USER}	COMMUNICATIONS CIRCUIT FLAG F_{CIR}
4	$\beta 1$	FEBRUARY 15 20:00	¥480	$\alpha 1$	

FIG. 17

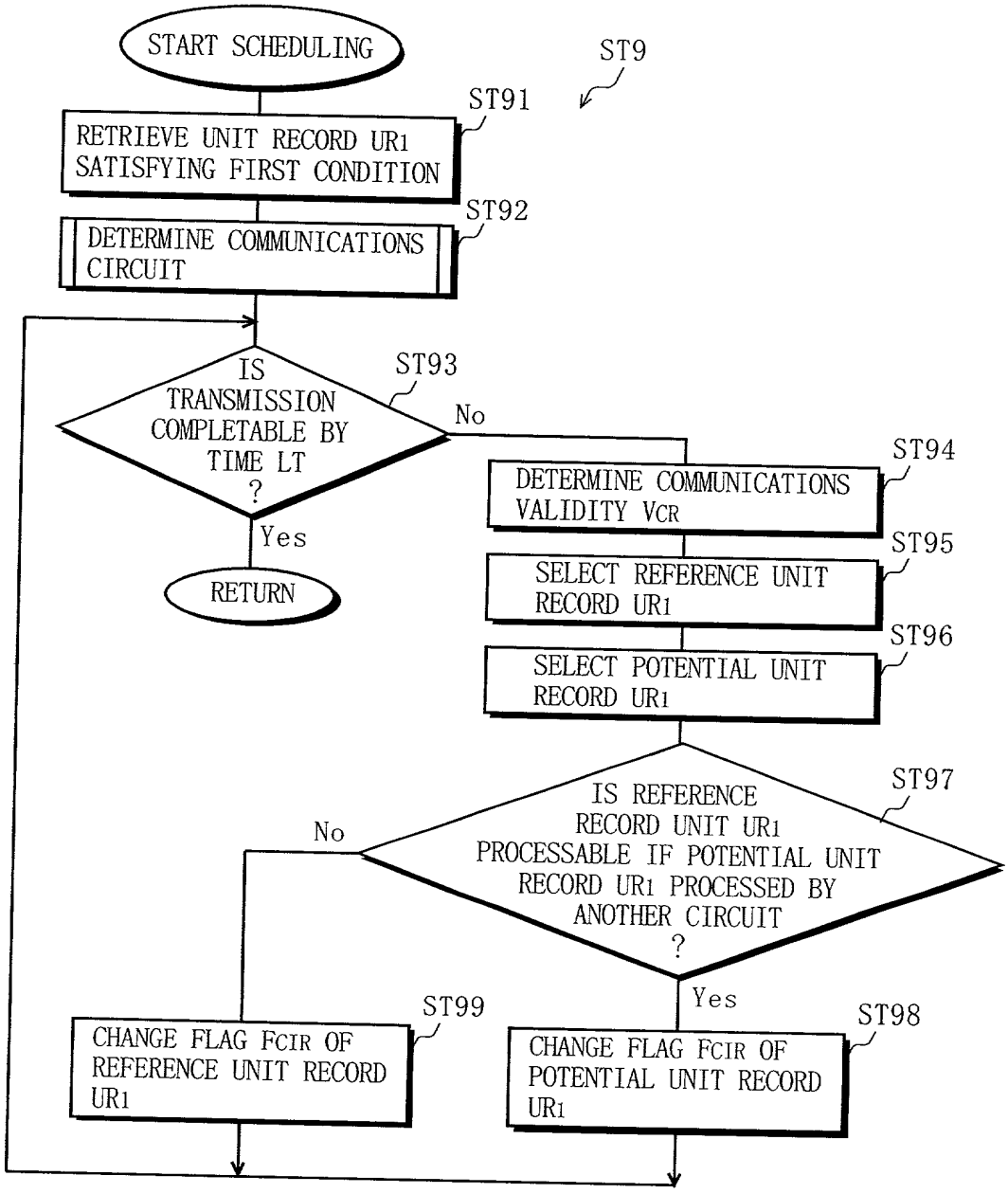

START SCHEDULING
ST9
ST91
RETRIEVE UNIT RECORD UR1 SATISFYING FIRST CONDITION
ST92
DETERMINE COMMUNICATIONS CIRCUIT
ST93
IS TRANSMISSION COMPLETABLE BY TIME LT ?
No
Yes
RETURN
ST94
DETERMINE COMMUNICATIONS VALIDITY VCR
ST95
SELECT REFERENCE UNIT RECORD UR1
ST96
SELECT POTENTIAL UNIT RECORD UR1
ST97
IS REFERENCE RECORD UNIT UR1 PROCESSABLE IF POTENTIAL UNIT RECORD UR1 PROCESSED BY ANOTHER CIRCUIT ?
No
Yes
ST99
CHANGE FLAG FCIR OF REFERENCE UNIT RECORD UR1
ST98
CHANGE FLAG FCIR OF POTENTIAL UNIT RECORD UR1

FIG. 18

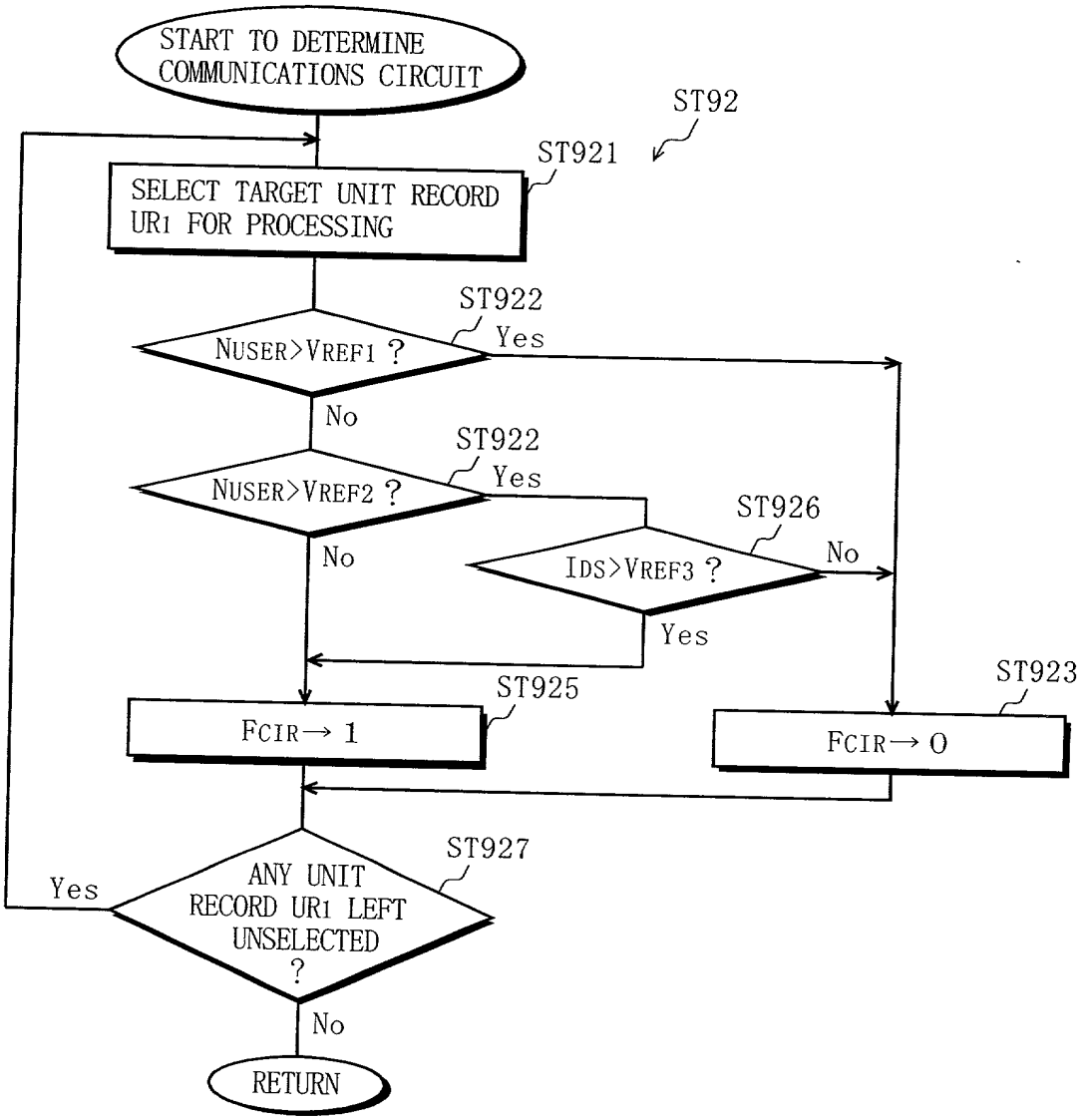

START TO DETERMINE COMMUNICATIONS CIRCUIT
ST92
ST921
SELECT TARGET UNIT RECORD UR1 FOR PROCESSING
ST922
NUSER>VREF1 ?
Yes
No
ST922
NUSER>VREF2 ?
Yes
No
ST926
IDS>VREF3 ?
No
Yes
ST925
FCIR→ 1
ST923
FCIR→ 0
ST927
ANY UNIT RECORD UR1 LEFT UNSELECTED ?
Yes
No
RETURN

FIG. 19a

UR11

DL CONDITION NUMBER N_{DL}	IDENTIFIER ID_{CD}	TIME LIMIT LT	TRANSMISSION EXPENSE TC	IDENTIFIER ID_{USER}	COMMUNICATIONS CIRCUIT FLAG F_{CIR}
1	$\beta 1$	FEBRUARY 17 18:00	¥400	$\alpha 1$- $\alpha 500$ (500 IDENTIFIERS ID_{USER} IN TOTAL)	0

FIG. 19b

UR12

DL CONDITION NUMBER N_{DL}	IDENTIFIER ID_{CD}	TIME LIMIT LT	TRANSMISSION EXPENSE TC	IDENTIFIER ID_{USER}	COMMUNICATIONS CIRCUIT FLAG F_{CIR}
2	$\beta 1$	FEBRUARY 16 20:00	¥480	$\alpha 6$ • •	1

FIG. 20a

UNIT RECORD UR1	COMMUNICATIONS VALIDITY VCR
UR1i	VCRi (=80)
UR1j	VCRj (=40)
UR1k	VCRk (=50)
UR1l	VCR1 (=20)
UR1m	VCRm (=70)

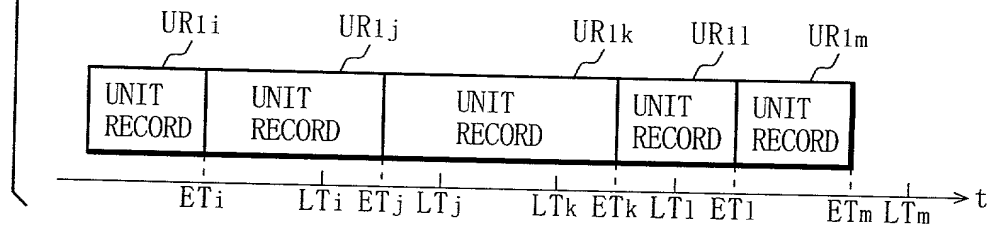


FIG. 20b

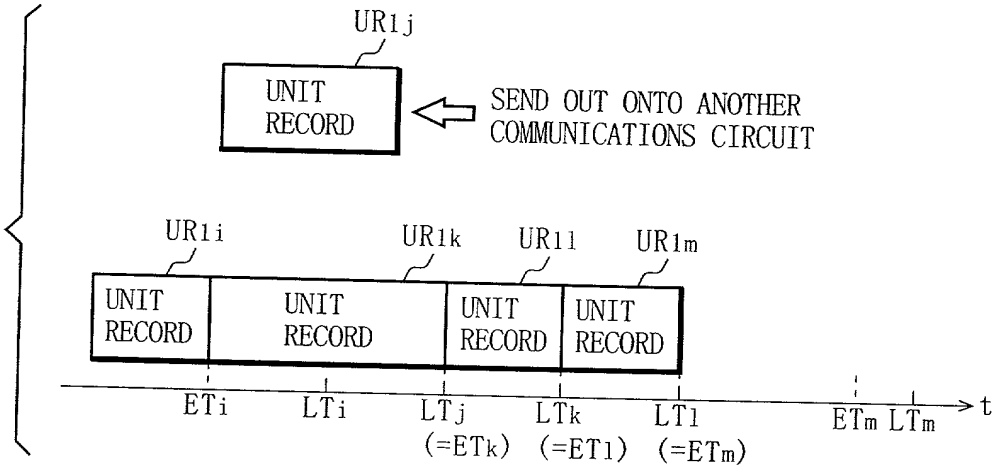


FIG. 21

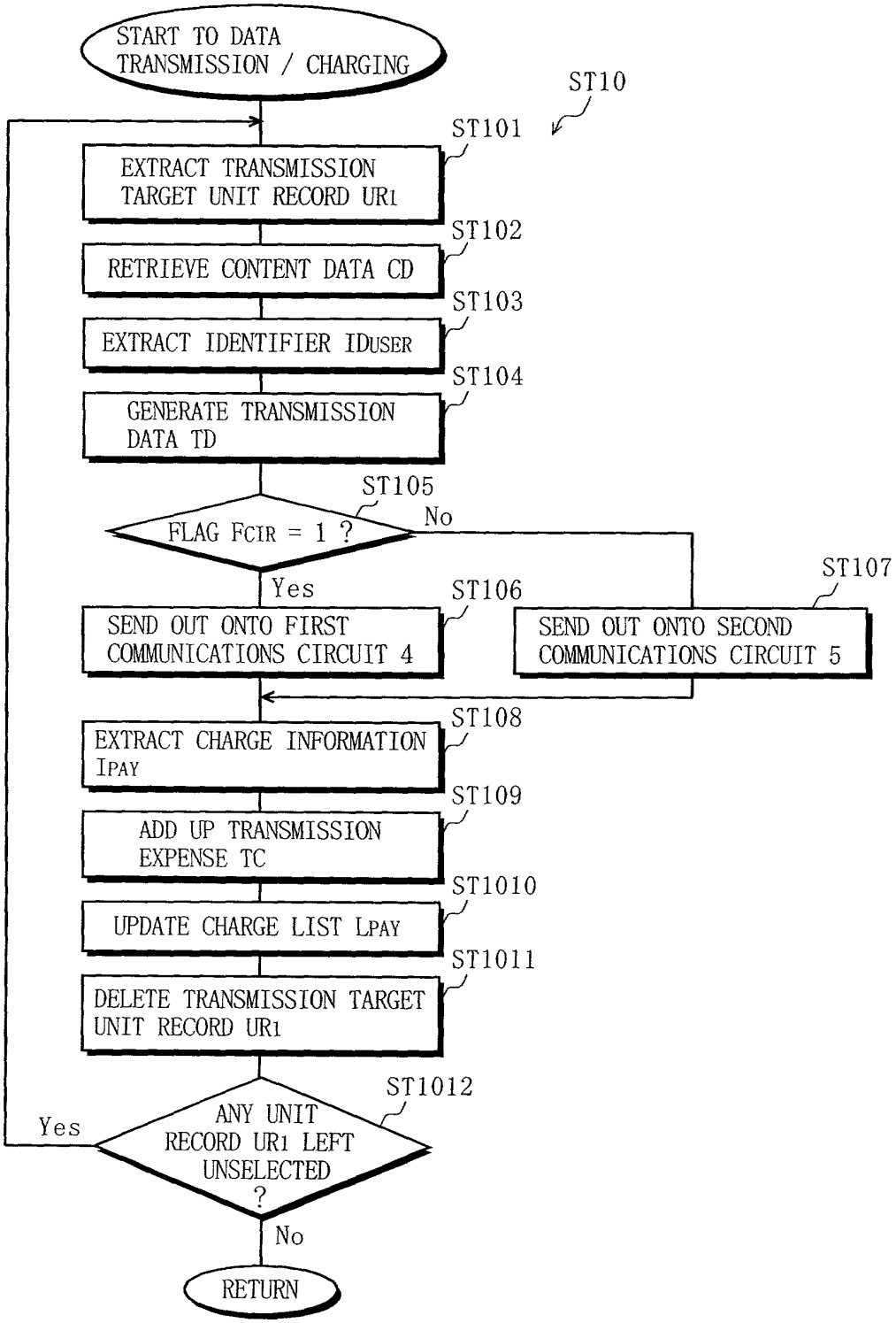

START TO DATA TRANSMISSION / CHARGING
ST10
ST101
EXTRACT TRANSMISSION TARGET UNIT RECORD UR1
ST102
RETRIEVE CONTENT DATA CD
ST103
EXTRACT IDENTIFIER IDUSER
ST104
GENERATE TRANSMISSION DATA TD
ST105
FLAG FCIR = 1 ?
No
Yes
ST106
SEND OUT ONTO FIRST COMMUNICATIONS CIRCUIT 4
ST107
SEND OUT ONTO SECOND COMMUNICATIONS CIRCUIT 5
ST108
EXTRACT CHARGE INFORMATION IPAY
ST109
ADD UP TRANSMISSION EXPENSE TC
ST1010
UPDATE CHARGE LIST LPAY
ST1011
DELETE TRANSMISSION TARGET UNIT RECORD UR1
ST1012
ANY UNIT RECORD UR1 LEFT UNSELECTED ?
Yes
No
RETURN

FIG. 22

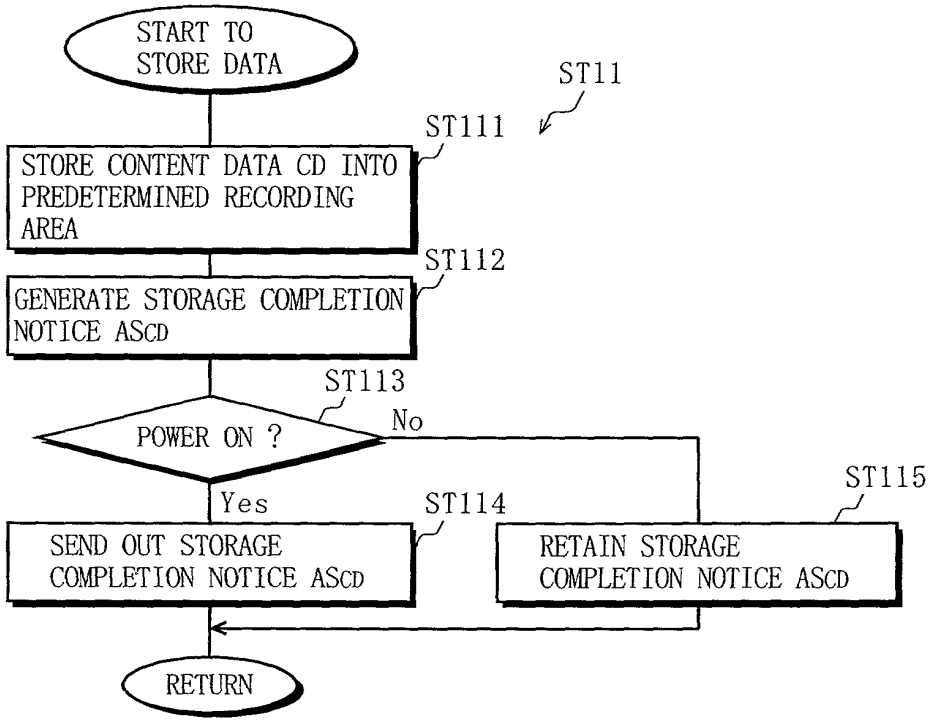

START TO STORE DATA
ST11
ST111
STORE CONTENT DATA CD INTO PREDETERMINED RECORDING AREA
ST112
GENERATE STORAGE COMPLETION NOTICE ASCD
ST113
POWER ON ?
No
Yes
ST114
SEND OUT STORAGE COMPLETION NOTICE ASCD
ST115
RETAIN STORAGE COMPLETION NOTICE ASCD
RETURN

FIG. 23a

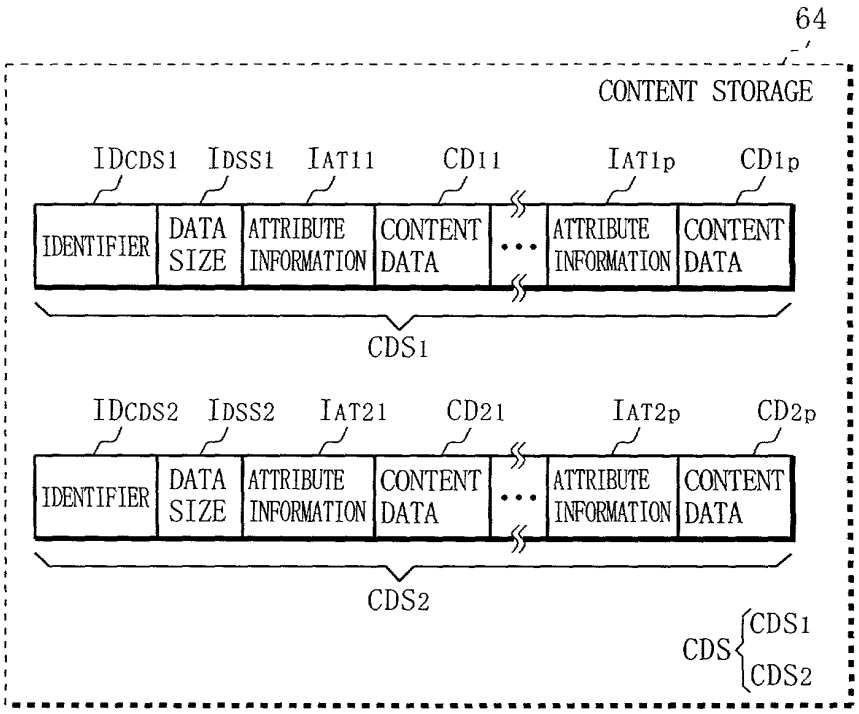


FIG. 23b

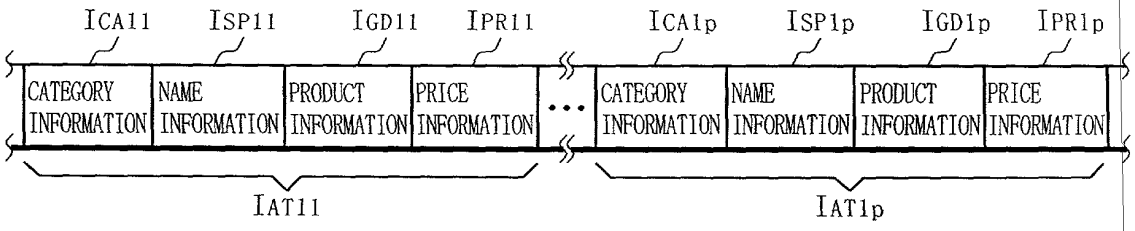


FIG. 23c

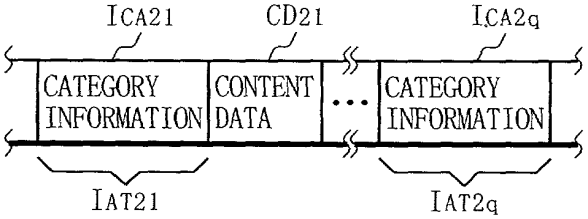


FIG. 24

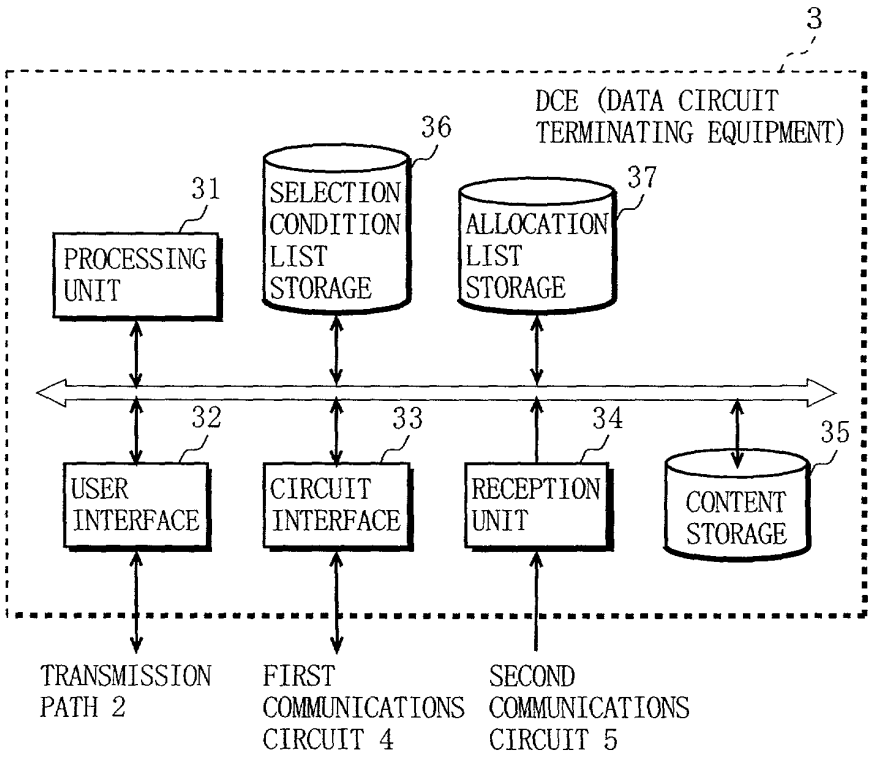

3
DCE (DATA CIRCUIT TERMINATING EQUIPMENT)
36
31
37
SELECTION CONDITION LIST STORAGE
ALLOCATION LIST STORAGE
PROCESSING UNIT
32
33
34
35
USER INTERFACE
CIRCUIT INTERFACE
RECEPTION UNIT
CONTENT STORAGE
TRANSMISSION PATH 2
FIRST COMMUNICATIONS CIRCUIT 4
SECOND COMMUNICATIONS CIRCUIT 5

FIG. 25

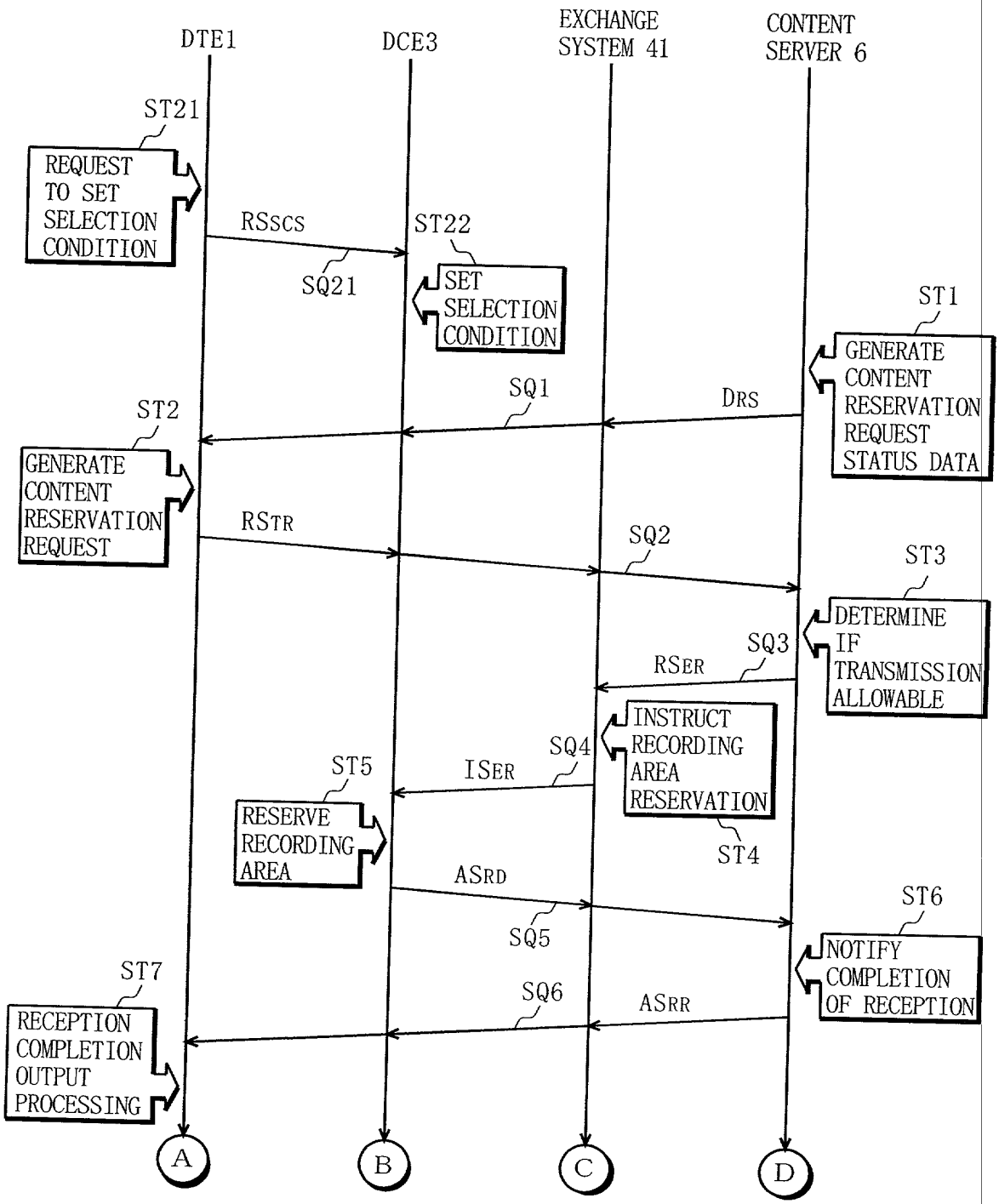

DTE1
DCE3
EXCHANGE SYSTEM 41
CONTENT SERVER 6
ST21
REQUEST TO SET SELECTION CONDITION
RSscs
SQ21
ST22
SET SELECTION CONDITION
ST1
GENERATE CONTENT RESERVATION REQUEST STATUS DATA
SQ1
DRS
ST2
GENERATE CONTENT RESERVATION REQUEST
RSTR
SQ2
ST3
DETERMINE IF TRANSMISSION ALLOWABLE
SQ3
RSER
INSTRUCT RECORDING AREA RESERVATION
SQ4
ST4
ST5
ISER
RESERVE RECORDING AREA
ASRD
SQ5
ST6
NOTIFY COMPLETION OF RECEPTION
ST7
SQ6
ASRR
RECEPTION COMPLETION OUTPUT PROCESSING
A
B
C
D

FIG. 26

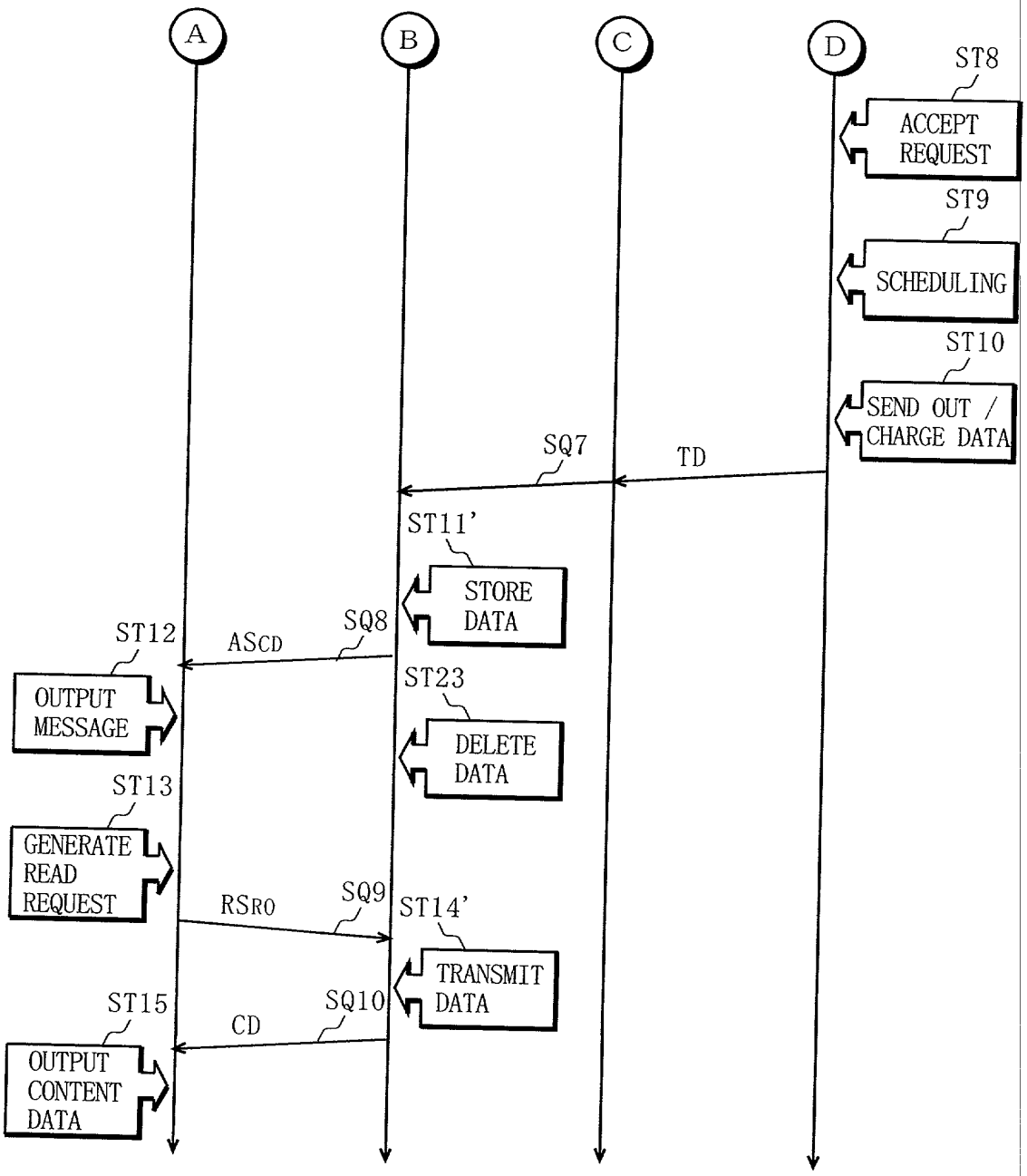

A
B
C
D
ST8
ACCEPT REQUEST
ST9
SCHEDULING
ST10
SEND OUT / CHARGE DATA
SQ7
TD
ST11'
STORE DATA
ST12
ASCD
SQ8
OUTPUT MESSAGE
ST23
DELETE DATA
ST13
GENERATE READ REQUEST
RSRO
SQ9
ST14'
TRANSMIT DATA
ST15
CD
SQ10
OUTPUT CONTENT DATA

FIG. 27a

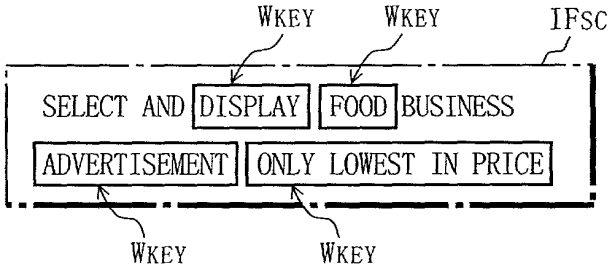


FIG. 27b

36

SELECTION CONDITION LIST STORAGE

LSC

SELECTION CONDITION LIST	
SELECTION CONDITION NUMBER NSC	SELECTION CONDITION SC
SELECTION CONDITION No. 1	SELECT FOOD BUSINESS ADVERTISEMENT ONLY LOWEST IN PRICE
SELECTION CONDITION No. 2	NOT SELECT REAL-ESTATE BUSINESS ADVERTISEMENT
SELECTION CONDITION No. 3	SELECT ALL ELECTRIC APPLIANCES ADVERTISEMENT
SELECTION CONDITION No. 4	NOT SELECT ENTERTAINMENT NEWS
SELECTION CONDITION No. 5	SELECT ALL NEWS, ENTERTAINMENT EXCLUSIVE

FIG. 28

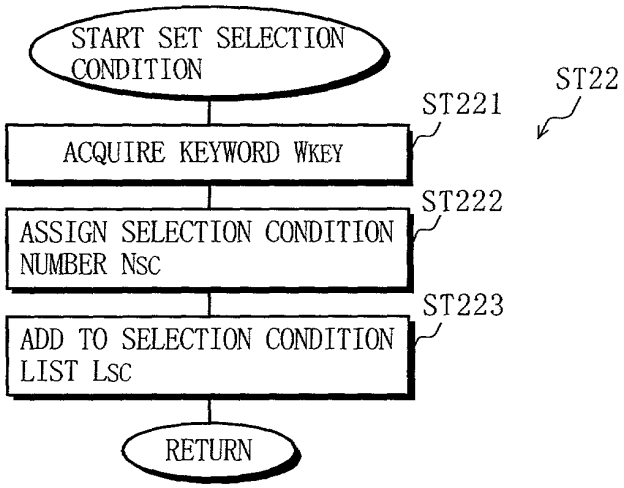

START SET SELECTION CONDITION
ST22
ST221
ACQUIRE KEYWORD WKEY
ST222
ASSIGN SELECTION CONDITION NUMBER NSC
ST223
ADD TO SELECTION CONDITION LIST LSC
RETURN

FIG. 29

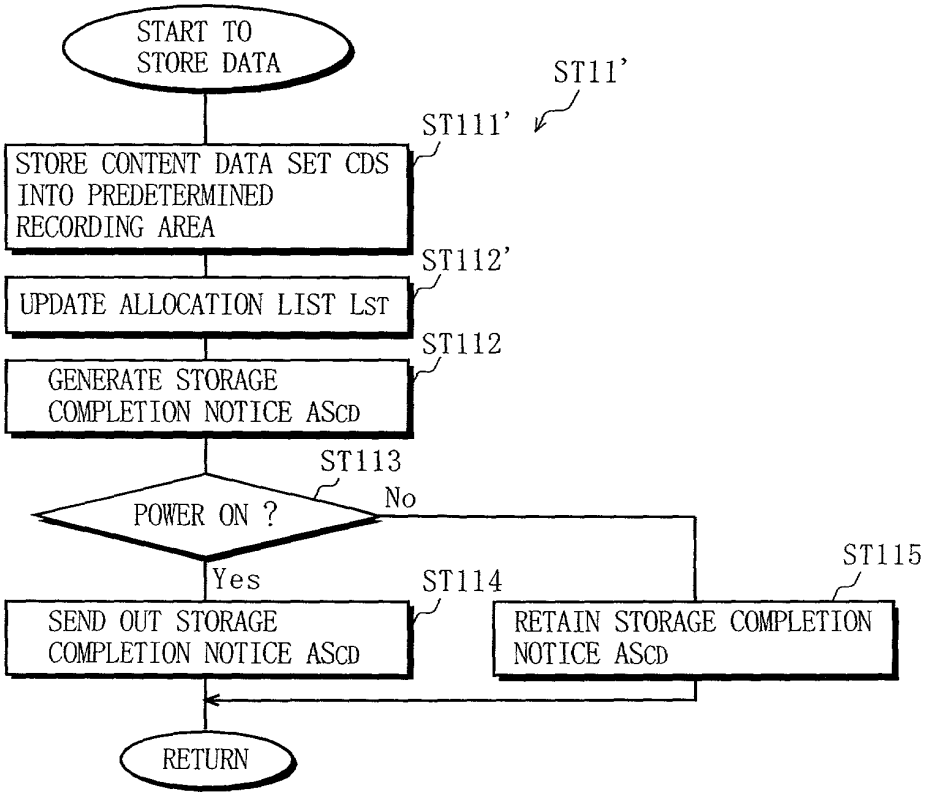
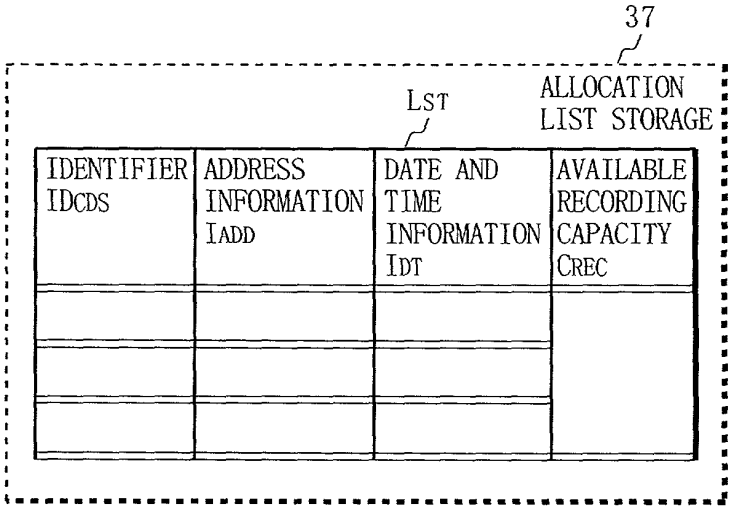

START TO STORE DATA
ST11'
ST111'
STORE CONTENT DATA SET CDS INTO PREDETERMINED RECORDING AREA
ST112'
UPDATE ALLOCATION LIST LST
ST112
GENERATE STORAGE COMPLETION NOTICE ASCD
ST113
POWER ON ?
No
Yes
ST114
SEND OUT STORAGE COMPLETION NOTICE ASCD
ST115
RETAIN STORAGE COMPLETION NOTICE ASCD
RETURN

FIG. 30



IDENTIFIER IDCDS	ADDRESS INFORMATION IADD	DATE AND TIME INFORMATION IDT	AVAILABLE RECORDING CAPACITY CREC

FIG. 31

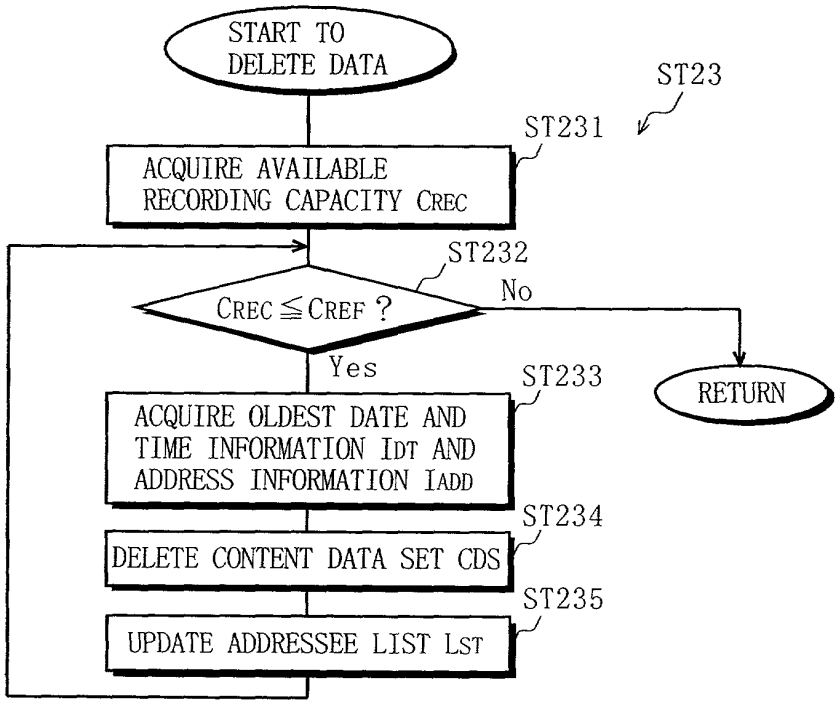


FIG. 32

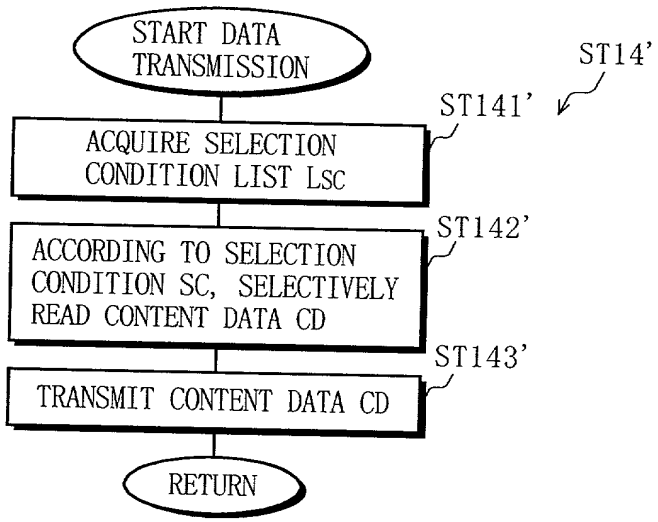

START DATA TRANSMISSION
ST14'
ST141'
ACQUIRE SELECTION CONDITION LIST Lsc
ST142'
ACCORDING TO SELECTION CONDITION SC, SELECTIVELY READ CONTENT DATA CD
ST143'
TRANSMIT CONTENT DATA CD
RETURN

FIG. 33

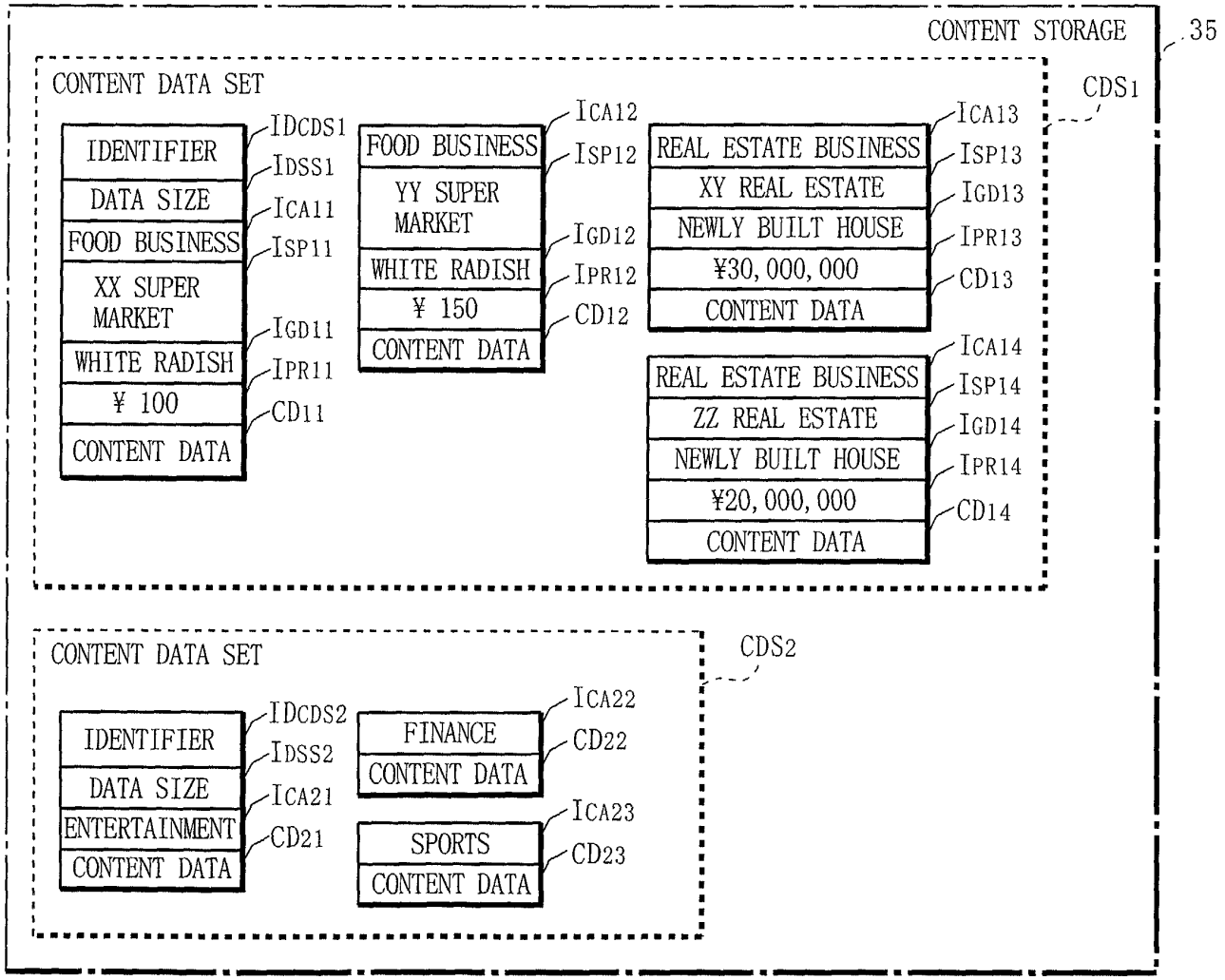
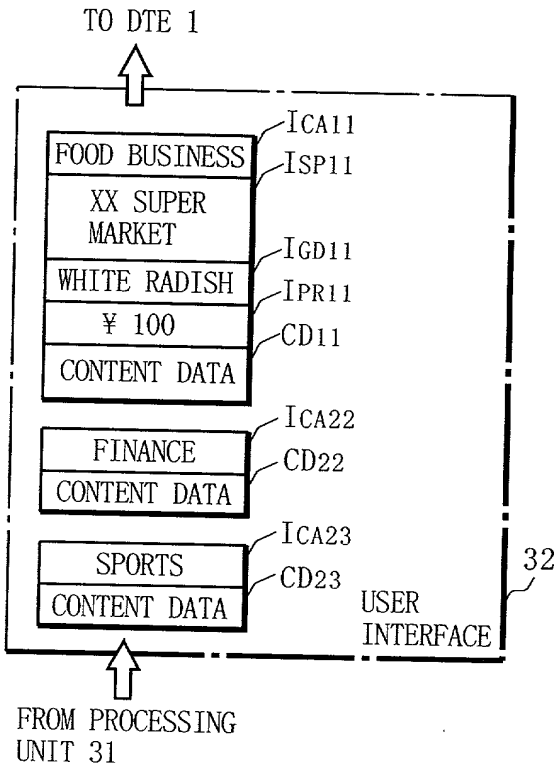

CONTENT STORAGE
35
CONTENT DATA SET
CDS1
IDENTIFIER
IDCDS1
DATA SIZE
IDSS1
FOOD BUSINESS
ICA11
XX SUPER MARKET
ISP11
WHITE RADISH
IGD11
¥ 100
IPR11
CONTENT DATA
CD11
FOOD BUSINESS
ICA12
YY SUPER MARKET
ISP12
WHITE RADISH
IGD12
¥ 150
IPR12
CONTENT DATA
CD12
REAL ESTATE BUSINESS
ICA13
XY REAL ESTATE
ISP13
NEWLY BUILT HOUSE
IGD13
¥30, 000, 000
IPR13
CONTENT DATA
CD13
REAL ESTATE BUSINESS
ICA14
ZZ REAL ESTATE
ISP14
NEWLY BUILT HOUSE
IGD14
¥20, 000, 000
IPR14
CONTENT DATA
CD14
CONTENT DATA SET
CDS2
IDENTIFIER
IDCDS2
DATA SIZE
IDSS2
ENTERTAINMENT
ICA21
CONTENT DATA
CD21
FINANCE
ICA22
CONTENT DATA
CD22
SPORTS
ICA23
CONTENT DATA
CD23

FIG. 34


TO DTE 1
FOOD BUSINESS
XX SUPER MARKET
WHITE RADISH
¥ 100
CONTENT DATA
FINANCE
CONTENT DATA
SPORTS
CONTENT DATA
ICA11
ISP11
IGD11
IPR11
CD11
ICA22
CD22
ICA23
CD23
32
USER INTERFACE
FROM PROCESSING UNIT 31